

CENTER FOR ENVIRONMENTAL STUDIES

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The undergraduate and graduate programs in environmental studies are interdisciplinary in nature, exposing students to the critical links between the areas of environmental life sciences, technology and policy.

At the undergraduate level, students gain the necessary skills for entry-level field and research positions. Class lectures and guest speakers introduce the importance of policy-making and awareness in the environmental field, while laboratory and internship experiences provide a working knowledge of the latest in environmental technology and field practices.

The graduate programs provide two options for students to further their studies in the environmental life sciences. The Master of Science in Environmental Studies is a thesis-based program designed for those individuals interested pursuing research in the environmental field. The Master of Environmental Studies (the non-thesis program) is a terminal, two-year professional degree for individuals working in the private/public sector of the environmental field.

- Environmental Studies, Bachelor of Science (B.S.) (<http://bulletin.vcu.edu/undergraduate/vcu-life-sciences/center-environmental-studies/environmental-studies-bs/>)
- Environmental studies, minor in (<http://bulletin.vcu.edu/undergraduate/vcu-life-sciences/center-environmental-studies/environmental-studies-minor/>)
- Outdoor Leadership, Certificate in (Baccalaureate certificate) (<http://bulletin.vcu.edu/undergraduate/vcu-life-sciences/center-environmental-studies/outdoor-leadership-certificate/>)
- Sustainable Innovation, Certificate in (Undergraduate certificate) (<http://bulletin.vcu.edu/undergraduate/vcu-life-sciences/center-environmental-studies/sustainable-innovation-certificate/>)

ENVS 101. Introduction to Environmental Studies I. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to environmental studies majors. Study of contemporary issues related to environmental studies including sustainability, biological conservation, global change and an overview of the core earth systems.

ENVS 102. Introduction to Environmental Studies II. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENVS 101 or permission of instructor. Enrollment is restricted to environmental studies majors. Studies of contemporary issues related to government policy and environmental issues at local to international scales.

ENVS 105. Physical Geology. 3 Hours.

Semester course; 3 lecture hours. 3 credits. A descriptive approach to physical geology dealing with the history and structure of the earth, catastrophic events and geology as it relates to the contemporary environment. An optional laboratory, ENVZ 105, may be taken with this course.

ENVS 201. Earth System Science. 3 Hours.

Semester course; 3 lecture hours. 3 credits. An introduction to the processes of and linkages among the major systems that drive planet Earth. The biosphere, geosphere, hydrosphere, atmosphere and sociosphere are presented as dynamic and interdependent systems.

ENVS 222. Electronic Portfolios. 1 Hour.

Semester course; 1 lecture hour (delivered online). 1 credit. This online course will guide individuals in developing an electronic portfolio consisting of student-curated collections of specific academic work, bibliographic information and a curriculum vitae used throughout their academic career. Graded as pass/fail.

ENVS 260. Outdoor Leadership. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course is designed to provide an introduction to the concepts and skills needed to work and lead teams in outdoor settings. Topics include the historical and philosophical foundations of outdoor leadership, outdoor teaching and facilitation, safety and risk management, and environmental stewardship. The course includes classroom and field application components.

ENVS 265. Paths to Environmental Leadership. 2 Hours.

Semester course; 2 lecture hours. 2 credits. Prerequisites: ENVS 101 and ENVS 102, both with a minimum grade of B. This course focuses on personal leadership development, leadership in the field of environmental studies, grant writing and revision, and the peer-review process. Discussions with guest speakers who are leaders in various environmental fields, additional readings and self-directed exploration of leadership figures will broaden our understanding of environmental leadership. Students will then use the Udall Undergraduate Scholarship application as a tool to begin to develop their own vision of environmental leadership and develop experience in grant writing and peer review.

ENVS 291. Special Topics in Environmental Studies. 1-4 Hours.

Semester course; 1-4 lecture hours. 1-4 credits. May be repeated with different topics for a maximum of 12 credits. An introductory investigation into a selected topic salient to environmental studies. See the Schedule of Classes for specific topics being offered each semester.

ENVS 300. Sustainable Societies: James River Basin. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course explores the 25 most critical social, economic and environmental issues in the region in a global context. It examines how people are tackling the issues of sustainably and turning them into opportunities.

ENVS 301. Introduction to Meteorology. 3 Hours.

Semester course; 3 lecture hours. 3 credits. An introductory course designed to provide the student with an overview of the structures and processes that cause weather. These include atmospheric circulations and the weather patterns that we observe. Emphasis will be placed upon the tracking and display of weather phenomena, as well as their forecast movement and impact.

ENVS 310. Introduction to Oceanography. 3 Hours.

Semester course; 3 lecture hours. 3 credits. An introductory course designed to provide the student with an overview of the structures and processes of the world's oceans. These include the systems that impact the oceans: the hydrosphere, the atmosphere, the geosphere, the biosphere and the sociosphere. Emphasis will be placed upon hands-on techniques for understanding these systems, including online simulations and in-class activities.

ENVS 311. Politics of the Environment. 3 Hours.

Semester course; 3 lecture hours. 3 credits. An exploration of the current controversy about environmental politics and the issues and crises it centers on. Special attention will be given to the constitutional, political and geographical factors in the development of environmental policy and the organized effort to deal with governmental actions and inaction and its impact on policy outcomes. Crosslisted as: POLI 311.

ENVS 314. Human-Environment Interactions: Foundations and Applications. 3 Hours.

Semester course; 3 lecture hours. 3 credits. A comparative study of the ecology and natural history of human populations, including the environments as determining factors in the evolution of human institutions and technology, resources management, and population crises; cultural traditions as mechanisms of population control; basic theory of population biology. Crosslisted as: INTL 314.

ENVS 315. Energy and the Environment. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Enrollment restricted to non-physics majors with junior or senior standing; not applicable to the physics major. A study of society's demands for energy, how it is currently being met, the environmental consequences thereof and some discussion of alternatives. Crosslisted as: PHYS 315.

ENVS 321. Cartography. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 131, STAT 208, or higher level MATH or STAT course. This course provides an introduction to the art and science behind the presentation of spatial information using maps and charts. Students will develop visual thinking and communication skills while applying cartographic theory to address contemporary practical problems. Students must have a laptop able to run ArcGIS Online.

ENVS 330. Environmental Pollution. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151 and BIOL 152. The study of pollution in the environment with emphasis on the procedures for detection and abatement.

ENVS 332. Environmental Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP 204. An interdisciplinary review of domestic and international environmental problems and their underlying causes, current management frameworks, alternative management approaches and strategies, and barriers to their implementation. Other topics include: environmental history and economics, population growth, natural resources use, biodiversity, pollution. Crosslisted as: URSP 332.

ENVS 335. Environmental Geology. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENVS 105 or URSP 204. The relationship between humankind and the physical environment, earth materials and processes, geological hazards, water, mineral and energy resources, land use, and environmental health and law.

ENVS 343. Data Literacy. 4 Hours.

Semester course; 4 lecture hours. 4 credits. Prerequisites: ENVS 102 and STAT 210. This course takes a hands-on, collaborative approach for students to develop proficiency in the application of data management skills, static and dynamic data visualization, and quantitative analyses of environmental and geospatial datasets. Students will be required to bring their own laptop and analyses and visualization will be performed using the R statistical programming language.

ENVS 355. Water. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 317 or ENVS 330 or permission of instructor. The course takes an ecosystem approach to understanding the functioning of streams, rivers, lakes, estuaries and oceans. The course complements curricula in biology and environmental studies and is specifically geared toward students with an interest in the water resources profession.

ENVS 360. Outdoor Programming and Event Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course is designed to provide students with information and practical experience required to successfully design, promote, implement and evaluate outdoor experiential programming across a range of contexts.

ENVS 361. Outdoor Team Building and Group Facilitation. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course is designed to provide students with the theory and practice of developing and deploying a successful outdoor recreational, educational, interpretive or adventure experience. In doing so, students will learn about group dynamics, team building, risk management and inquiry-based learning techniques.

ENVS 368. Nature Writing. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 201, ENGL 202, ENGL 203, ENGL 204, ENGL 205, ENGL 206, ENGL 211, ENGL 215, ENGL 217, ENGL 236, ENGL 250, ENGL 291, ENGL 295 or NEXT 240. A study of the literary genre of nature writing in English. Crosslisted as: ENGL 368.

ENVS 370. Applications of Conservation Science. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENVS 343. The field of conservation science is focused on protecting biodiversity through the promotion of both social and ecological processes. This course will provide a foundation in the real-world applications of conservation science and demonstrate how data are essential to effective conservation of natural resources.

ENVS 391. Special Topics in Environmental Studies. 1-4 Hours.

Semester course; 1-4 lecture hours. 1-4 credits. May be repeated with different topics for a maximum of 12 credits. A detailed investigation into a selected topic salient to environmental studies. See the Schedule of Classes for specific topics being offered each semester.

ENVS 401. Meteorology and Climatology. 3 Hours.

Semester course; 3 lecture hours. Prerequisite: PHYS 201 or PHYS 207. A basic, semiquantitative course in the elements of weather and climate, their driving forces and their spatial and temporal distribution and variability. Atmospheric motions and circulation, weather forecasting, human impact on weather and climate.

ENVS 411. Oceanography. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, BIOL 152 and CHEM 102. A basic course in the physical, chemical and geological properties of oceans and ocean basins. Origin and character of ocean basins, properties of oceanic waters, oceanic circulation, land-sea interactions, marine environments and ecology.

ENVS 421. Environmental Data Visualization. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 314. This is an introductory course in using databases and geospatial technology. The course will introduce students to computer technology, project development and management skills, database management skills, and geospatial technology. Students will use in-class applied environmental analyses to guide skill-set development. The course will introduce the students to working with data in various formats and using the ArcGIS software suite to visualize the data. Students will be introduced to Microsoft Excel, Microsoft Access, ESRI ArcGIS software suite and ESRI ArcGIS Online.

ENVS 430. Invasive Species Management. 3 Hours.

Semester course; 1 lecture and 2 field experience hours. 3 credits. Prerequisite: BIOL 317. This course explores the ecological, political and regulatory issues surrounding invasive species in the city of Richmond and the commonwealth of Virginia. Students will be introduced to the James River Park System habitat restoration plan, a long-term strategy to manage non-native invasive species. Individuals will work directly with environmental professionals, park personnel and community partners to restore natural areas.

ENVS 460. Wilderness First Responder. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course is intended for anyone working in a position of leadership in an outdoor setting or for individuals who want a high level of wilderness medical training for working in remote field settings, extended personal backcountry trips or expeditions. The course is a comprehensive and in-depth look at the standards and skills of dealing with response and assessment, musculoskeletal injuries, environmental emergencies and survival skills, soft tissue injuries, and medical emergencies. Additional topics, such as CPR, are also included. Wilderness First Responder training is the industry standard for those who work as government and nongovernment field technicians, backcountry trip leaders, camp counselors, mountain guides, river guides and ski patrollers.

ENVS 461. Wilderness Policy and Practice. 3 Hours.

Semester course; 2 lecture and 1 field experience hours. 3 credits. This course takes a multidisciplinary and experiential look at the concept of wilderness. Learning spans from the classroom to a first-hand wilderness experience, and materials include environmental law, natural resources management, environmental philosophy and ethics, regional and local history, and conservation science. Throughout students will focus on the intersection between society, biodiversity and the wilderness concept in principle and practice.

ENVS 490. Research Seminar in Environmental Studies. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisites: senior standing and at least 12 hours of approved environmental studies course work. An interdisciplinary examination of problems and issues central to environmental studies. Environmental research of VCU faculty will be reviewed, and selected local environmental problems will be studied. Each student will complete a research project focusing on a specific environmental question.

ENVS 491. Topics in Environmental Studies. 1-4 Hours.

Semester course; 1-4 lecture hours. 1-4 credits. May be repeated with different topics for a maximum of 12 credits. An in-depth study of a selected environmental topic. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

ENVS 492. Independent Study. 1-3 Hours.

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all topics courses. Prerequisite: junior or senior standing, and permission of instructor.

ENVS 493. Environmental Studies Internship. 1-3 Hours.

Semester course; variable hours. 1-3 credits per semester. Maximum total of 6 credits. Prerequisite: junior or senior standing, and permission of instructor. Graded as pass/fail.

ENVS 499. Environmental Studies Capstone Experience. 0 Hours.

Semester course; variable hours. 0 credits. Corequisite: ENVS 490, ENVS 491 (when topics implement core competencies required for a capstone experience and are approved by the director of the Center for Environmental Studies), ENVS 492 or ENVS 493. Enrollment restricted to students who have completed 90 hours of undergraduate course work. Any of the corequisite courses qualify as a capstone experience if taken with this course. Graded as pass/fail.